

ABSTRACT

An improved low-loss waveguide crossover uses an out-of-plane, such as vertical, waveguide to bridge over any number of waveguides with very low, or essentially no, optical loss or crosstalk. Optical signals transmitted in a waveguide system having the improved waveguide crossover can cross over one or multiple transverse waveguides with a greatly reduced loss of signal intensity by using a second waveguide (such as a bridge) positioned in a second plane different from the plane containing the transverse waveguides. An optical signal from the input waveguide is coupled efficiently through directional coupling to the bridge waveguide and optionally from the bridge waveguide to the output waveguide. Methods for fabricating the improved waveguide crossover are described.